

### Claims

- 1    1.    Method for generating pronunciation variants, in particular for a process  
of recognizing speech, in at least one given target language (TL) and/or dialect,  
- wherein speech of at least one and with respect to said given target  
language (TL) and/or dialect native speaker is analyzed using a recognizing  
5    system (SR) to derive pronunciation variants and/or rules for in particular ac-  
cented speech in said target language (TL) and/or dialect and  
- wherein a recognizing system (SR) is used which is designed for and/or  
trained in at least one given source language (SL).
- 10   2.    Method according to claim 1, wherein said recognizing system (SR) is - in  
at least a preprocessing step - trained in at least said given source language  
(SL) and/or dialect.
- 15   3.    Method according to claim 1 or 2, wherein speech in said source lan-  
guage (SL) and/or dialect of at least one and with respect to said source lan-  
guage (SL) and/or dialect native speaker is used for training.
- 20   4.    Method according to anyone of the preceding claims, wherein sets of pro-  
nunciation variants and/or rules are derived from said analysis in each case as  
pronunciation variants and/or rules of speakers of said source language (SL)  
as a mother tongue or native language trying to speak said target language (TL)  
as a foreign language.
- 25   5.    Method according to anyone of the preceding claims, wherein new  
pronunciation variants are generated by applying said derived pronunciation  
rules to a given starting lexicon for said target language (TL), in particular so  
as to enrich said starting lexicon to yield a modified lexicon, in particular for a  
recognition process for said target language (TL).
- 30   6.    Method according to claim 5, wherein a canonical lexicon is used as said  
starting lexicon in which pronunciation variants and/or rules only of native  
speakers of said target language (TL) are initially contained.
- 35   7.    Method according to anyone of the preceding claims, wherein a recogni-  
tion process or system (SR) which is specific for said source language (SL) is  
employed for generating pronunciation variants and/or rules.

1    **8.**    Method according to claim 7, wherein said recognition process or system  
         (RS) for generating pronunciation variants and/or rules contains or is based on  
         at least one language model and a hidden Markov model, which is particularly  
         trained on said source language (SL), in particular by native speech.

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**9.**    Method according to claim 7 or 8, wherein said recognition process or  
         system for generating pronunciation variants contains or is based on at least a  
         phone loop structure for recognizing sequences of phones, phonemes and/or  
         other language subunits or the like.

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**10.**   Method according to anyone of the claims 7 to 9, wherein said recog-  
         nition process or system (SR) for generating pronunciation variants and/or  
         rules is restricted by a n-gram structure, in particular by a bi-gram structure,  
         or the like, in particular trained on said source language (SL).

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**11.**   Method according to anyone of the preceding claims, wherein speech of a  
         variety of speakers of the target language (TL) and/or dialect as a native or  
         mother language is analyzed so as to further increase the set of pronunciation  
         variants and/or rules for said target language (TL).

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**12.**   Method according to anyone of the preceding claims, which is trained in  
         advance of a process for recognizing speech based on training data, in par-  
         ticular by evaluating a given speech data base of said target language (TL) and  
         or dialect.

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**13.**   Method according to anyone of the preceding claims, which is trained  
         during the application to a process of recognizing speech of said target  
         language (TL) by a speaker of said target language (TL) as a native or mother  
         language.

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**14.**   Method according to claim 13, wherein said language model and/or n-  
         gram structure for restriction are modified by evaluating said recognition  
         process and in particular the recognition results so as to simulate memorizing  
         by a human listener.

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**15.**   Method for recognizing speech of at least one target language (TL),  
         wherein a method for generating pronunciation variants according to anyone of  
         the claims 1 to 14 is involved.

1    **16.**    Method according to claim 15, wherein the generation of pronunciation variants is carried out at least in part as a pre-processing step, in particular in advance of recognizing speech in said target language (TL).

5    **17.**    Method according to claim 15 or 16, wherein the generation of pronunciation variants is carried out at least in part during the process of recognizing speech of said target language (TL).

10    **18.**    Method according to anyone of the claims 15 to 17, wherein a variety of different source languages (SL) and/or of target languages (TL) is involved.

15    **19.**    System for generating pronunciation variants and/or rules and/or for recognizing speech which is capable of performing the method according to anyone of the claims 1 to 14 and/or the method according to anyone of the claims 15 to 18.

20    **20.**    Computer program product, comprising computer program means adapted to perform and/or realize the method for generating pronunciation variants and/or rules according to anyone of the claims 1 to 14 and/or the method for recognizing speech according to anyone of the claims 15 to 18 and/or the steps thereof when it is executed on a computer, a digital signal processing means and/or the like.

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